

AMATEUR RADIO

FEBRUARY

1949

JOURNAL OF THE WIRELESS INSTITUTE OF AUSTRALIA

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AMATEUR RADIO

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EDITORIAL



"THE YOUNG AMATEUR."

Judging by the healthy membership of most of the divisions of the W.I.A., one is impressed by the fact that this expansion is due in no small measure to the many hundreds of young amateurs who are now joining up. On the other hand, it would probably be found upon investigation, that quite a sprinkling of foundation members are still to be found in the ranks of the membership.

My present thoughts, however, are with the young amateur; the man who has for the past few months applied himself assiduously to his theory and practical studies for his A.O.C.P. His enthusiasm has spurred him on, and at last he holds the coveted amateur operators certificate of proficiency. He is in a vastly different position from the other young man who held a similar ticket 25 to 30 years ago. He has benefitted by his forebears' experience, and all his component requirements, backed by adequate literature, have been very amply catered for, and, in fact, he has little difficulty in going on the air with a T-9 signal from the word "go."

This is excellent, and indicates that he is conscious of all the advantages that he now possesses in the application of

suitable materials for his purpose, and that he can apply them with certainty and effectiveness. Many old hands plodding along with old and untested materials, which will "just do for the time being," could well take example from the transmissions of some of our newcomers. The young amateur of to-day quite likely possesses a good practical background by reason of the fact that he has probably had service training in the past, and now relies upon radio for his daily job. This knowledge he effectively applies in his experiments with amateur gear with fine effect and precision, and it is these young men that we must encourage and develop as part of the national pattern of amateur radio.

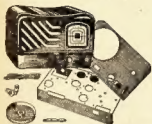
We have stressed before the need for banding these young members into an effective reserve force for service to their country in time of need. The facilities for their higher training are all here, but the opening for service is slowly being forgotten by the Government and amateurs alike, for want of a decisive lead. It surely needs someone who can take up the threads and weld this young potential with all its energy and enthusiasm into something that can be fine and patriotic.

—P.E.

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A.C. FOR THE D.C. HAM.

A Simple and Cheap Inverter for Amateurs on D.C. Mains.

BY ERIC CORNELIUS,* VK6EC

This article is written specifically for Amateurs using d.c. mains, and brings the humble vibrator from its home in the 6 volt receiver, or portable gear, to pride of place in the first unit of your equipment—a vibrator-inverter, limited to about 500 watts.

The circuit is original, the only publication being by the author in the I.R.E. "Proceedings" of June 1946, and reference from readers of this paper has led to its being rewritten for "Amateur Radio" and you.

Most Hams on d.c. mains, at some period or another, have considered that Amateur Radio can give enough problems in applied science of its own, without adding to it those problems inherent in floating their gear from d.c. mains. The flat limit of 200 volts on the anodes of all tubes limits power input, or forces unwieldy parallel-push-pull stages. Heater problems are a study of their own, with instability dogging long heater lines, used in an effort to save hundreds of watts in dropping resistors—and power in d.c. areas notoriously is not cheap.

So let's away with it, and run the lot from a.c. in civilised fashion, have the right volts and the right current in the right places. How to do it? A rotary converter is a big budget item, and an interference problem of tremendous size—so let us use the humble vibrator, and do it cheaply, efficiently, and have a comparatively easy job in keeping it quiet.

WHAT IT WILL DO—

Provide up to 500 watts or more of a.c. of fair wave-form at 50 or 100 cycles at any voltage you want.

Start instantly, and run continuously without attention.

Cost you less than one quarter of the price of a rotary converter of the same output.

WHAT IT WILL NOT DO—

Run for long off load—watch it.

Provide good voltage regulation.

The c.w. man on medium to high power would have to have auxiliary gear to cut the output on "key up."

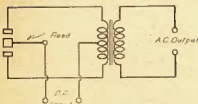


Fig. 1.

The fundamental standard vibrator circuit as used on low voltages (Fig. 1) is not applicable to d.c. mains voltages, unless expensive and complex precautions are taken. On contact break, the full current, through an inductive load, will cause a strong arc, and immediate destruction or welding of the contacts.

If a circuit is arranged such that the potential difference across each pair of contacts is reduced to near zero, just at contact break, the arc will be eliminated. Such a circuit is shown in Fig. 2, where a capacitor is placed in series with the primary circuit of the transformer.

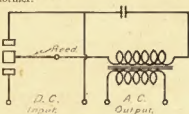


Fig. 2.

Fig. 3 shows an extension of the method, with two capacitors. One will be charging, while the other is discharging, but in the same direction through the transformer primary.

The capacitors and the transformer form a series resonant circuit, and as the transformer effective inductance is a function of its loading, the size of the capacitors will be a function of the load.

Without going into mathematics, the size of capacitor required for a given load may be obtained approximately from—

$$C = \frac{P}{E^2 f}$$

where—

C is total capacity in farads (sum of both halves).

P is power output required in watts.

E is d.c. mains voltage.

f is vibrator frequency.

Most receiver type commercial vibrators have a frequency of 100 cycles/sec. Assuming 220 volt mains, the capacitor figure is 4.54 watts per μF , with a figure of about 4 watts per μF realisable in practice. From the circuit it will be seen that electrolytics will do admirably, but the current rating is high, so use 525 volt units, and mount them in a well ventilated point—above chassis, and vertical.

PRACTICAL CIRCUIT

A split reed synchronous vibrator is used, with one half of the reed isolated from the rest of the circuit, and used

in the interrupter circuit only—call these the "drive" contacts. The other half of the reed, and associated contacts—called the "work" contacts—are used in the condenser-transformer circuit described above. The current required to drive the reed is from 70 to 100 Ma for Ferrocart and Oak vibrators, and a 15 watt lamp will usually serve as a dropping resistor, although a 25 watt lamp may be needed.

As both halves of the reed are above earth potential, and one is usually connected to the can internally, from a safety viewpoint it is advisable to remove the internal connection, and earth the can direct, or enclose the whole inverter in a case.

THE TRANSFORMER

Details of the transformer are as follows (for 220 volt mains):—

Primary.—75 volts plus and minus five and ten volts.

Secondary.—240 volts or to suit.

Note.—Where the mains voltage is other than 220 volts, adjust the rated primary voltage to suit, and where the range of mains voltage is wide, more primary taps will be needed, and appropriate switching to compensate.

$$\text{Nominal Primary Volts} = \frac{\text{Mains Volts}}{2\sqrt{2}}$$

$$\text{i.e. } \frac{220}{2.8} = 78 \text{ Volts.}$$

Winding.—When ordering, or making it yourself, use a turns/volt ratio 10% higher than for a.c. mains practice, i.e. if the normal mains transformer calculations gives a 2 turns-volt ratio, use 2.2 turns-volt.

The writer found that a transformer designed to normal mains figures took a very heavy exciting current off load which did not occur on a.c. mains. The probable reason is the wave form.

Shield.—A good electrostatic shield is essential.

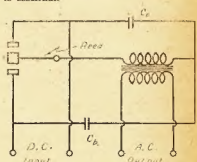


Fig. 3.

* C/o, Regional Station 6WA, Wagin, Western Australia.

CAPACITOR SWITCHING

This is the main control of voltage output with change of load, and the circuit shows that capacitors not in use in the inverter circuit are assisting in filtering the d.c. side.

The range of capacitors will be in accordance with your power requirements. Say 8 plus 8 for your first position—permanently in circuit—then 8 plus 8, 16 plus 16, and then as required.

For the switch a modified Yaxley plate is used. Use $\approx 6 \times 2$, and move four of the "pips" into adjacent slots in the centre plate, and you have it.

For light loads the transformer will be on the 75 or 60 volts tap, and as the load increases, 1R losses will mean the use of the 70 volt tap.

The inverter must be operated near its resonance point, but this is broad, and a good check, if voltage is low, is to drop one tap on the transformer, and if this does not raise the voltage sufficiently, then switch in more capacity. Run the unit on the minimum capacity

reasonable figure. Use may be made of the lamp as an indicator for "a.c. on," and the "drive" dropping lamp for "d.c. on" if bright enough.

D.C. REVERSING SWITCH

It was found, after many hours of running on heavy load that each pair of the vibrator "work" contacts developed a crater and a cone, their relative positions depending upon the polarity of the mains. Reversing the polarity to the contacts once a week, or daily if used a great deal, overcame this. The position of the switch reverses the d.c. to the vibrator without upsetting the polarity to the electrolytics.

ALTERNATIVE VIBRATOR

If you are unhappy, as I was, about a small receiver vibrator handling up to 500 watts, although it stood up quite well, use one as fitted to the Type 109 Army Set. This is a heavy duty 50 cycle job, which will stand anything you like to give it. As the frequency is

R.F. FILTERING

Use good quality capacitors throughout. The chokes in the power leads may be R.C.S. mains filter types for a.c./d.c. sets, with a 0.75 amp. rating, but for higher powers, wind your own. A method tried and proved was to cut five cards of punching bakelite 3" in diameter, slot with an odd number of



Fig. 5.—Output Waveform, no load. Note supersonic hash frequency not to scale. R.M.S. value of this—240 volts—peak volts are much higher.

slots (three hacksaw blades side by side), and wind with 20 gauge in a basket weave. Space the cards about 1" and mount on a wooden dowel. Connect in series. It is bulky, but efficient. Earthing one leg of the a.c. output dispenses with one half of the filter on this side.

In earthing, use h.f. techniques, with short heavy leads, and one point earthing. Layout is important, but with good workmanship, and a vented copper or aluminium shield around the whole unit, r.f. noise may be reduced to receiver background noise level over a frequency range from 0.5 to 30 Mc.

GENERAL

The unit will start instantly on full load, and will run your receiver, transmitters, and associated gear as efficiently as will the a.c. mains. All you must watch is the output voltage with a varying load, and adequate ventilation of those electrolytics. If you have some paper capacitors, well and good,

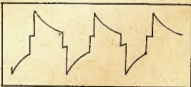


Fig. 6.—Output Waveform, correct load approximately. This waveform was taken at a 400 watt loading, 100 cycles.

use as many as you can. You may need a little more filtering in your power supplies, as the wave form is rather square, and the hum may be a little harder to filter. Overall efficiency is about 70%, so see your electric light bill fall, and your scope expand.

Refinements you may fit are a d.c. overload relay in the supply side, and a rectifier operated reversed polarity relay, both arranged to kill the input to the electrolytics.

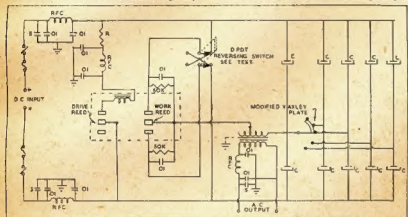


Fig. 4.

R.F.C.1—Special chokes, see text.
R.F.C.2—2.5 mH. receiver choke.
R—15 or 20 watt lamp, 220 v.

C—Electrolytic capacitors to suit loading.

All 0.01 uF. capacitors are mica.

All 0.5 uF. capacitors are 600 volt paper.

that will serve, without dropping your transformer tapping lower than the minus 5 volts position on the primary, except possibly for very heavy loads.

For varying loads, as in c.w., a relay operated switch to bring in extra capacity on "key down" may be needed, or a heavy a.c. bleed. For phone, a simple lamp load, switched in when the rig is off will suffice, or alternatively, switch out capacity. Experiment, and if possible (financially) have an accurate voltmeter on your a.c. output.

To save the inverter from flashovers should the load accidentally be removed completely, wire a 15 watt lamp permanently across the a.c. output, as off load, the peak voltage (supersonic oscillations) is over the thousand mark—even for an r.m.s. value of 240. This has been watched on an oscillograph, but a small lamp clips this down to a

one half that of the other, you will need twice as much capacity, but this too, will have the good effect of easing the current load on the capacitors and minimise heating.

This vibrator is easily available ex-disposals, and is in a rectangular metal case, about 6" x 2 1/2" x 3" high, with two six pin chassis pins in the base, and usually with a grey wrinkle finish.

You will need to rewind the driving coil, which is easy. Measure the clearances as near as you can before disassembling. Remove both bobbins by the screws in the pole pieces, ditch all the wire and insulate the pole pieces (cores). Then wind both with wire of 50 gauge or finer, connect in series, and re-assemble. The resistance will then be from 150 ohms up, depending upon the gauge of wire, and 70 Ma. or less will drive it.

IONOSPHERIC PREDICTIONS FOR THE AMATEUR BANDS

FEBRUARY 1949

The charts accompanying this page, prepared by the Ionospheric Prediction Service of the Commonwealth Observatory, are similar to earlier sets in the series published in the November, 1948, issue of this magazine. Nine of the charts, prefixed by the letter "C" for Canberra, refer to forecasts for the South-Eastern Australian States. The remainder, prefixed by the letter "P" for Perth, are for Western Australia.

The Canberra charts refer to the following world zones:—

Zone	Region	Terminal
1	Western Europe	London
2	Mediterranean	Cairo
3	N.-West America	San Francisco
3a	N.-East America	New York
4	Central America	Barbados
5	South Africa	Johannesburg
6	Far East	Manila

The Perth charts are similar to those based on Canberra, except that the Far East terminal is Shanghai in chart P-Z6. No forecasts are given from Perth to zones Z2 and Z4 for the current month. Chart P-Z2 would be essentially similar to P-Z1 while chart P-Z4 would be unreliable due to auroral activity in high northern latitudes.

USE OF CHARTS

All that is necessary in using the charts is to select a time (G.M.T.) during which a specified Amateur band frequency is below the maximum usable frequency (m.u.f.) of the F region of the ionosphere but above the lowest useful frequency (l.u.f.) for the desired contact. In two cases, zones 1 and 3a, it is necessary to consult both the short-route (s.r.) chart and the following long-route (l.r.) chart.

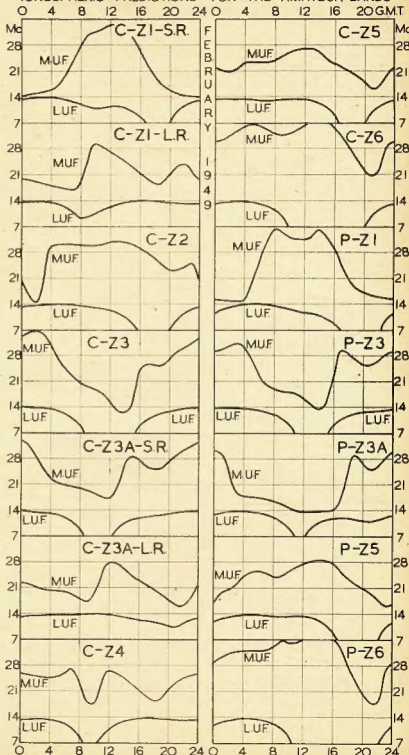
A practical example might be that of a contact desired between Sydney and Hong-Kong. The chart to use is C-Z6. This chart shows that the 28 Mc. band should be open from before midnight to 18 hours G.M.T. with best conditions for a few hours after Greenwich noon. The 14 Mc. band should be open for 24 hours but conditions are likely to be poor for several hours around midday in Australia when the l.u.f. is close to 14 Mc. The 7 Mc. band will be available only between sunset and sunrise in Australia, when the path is in darkness.

COMMENTS WELCOMED

The Prediction Service would welcome comments on the accuracy of these predictions. In particular answers to the following questions would be most helpful:—

1. Did a break occur consistently in the 28 Mc. band from 18 to 23 hours G.M.T.?
2. Was the 14 Mc. band open for 24 hours?
3. Were conditions much better on 28 Mc. than on 14 Mc. around noon in Australia?

IONOSPHERIC PREDICTIONS FOR THE AMATEUR BANDS



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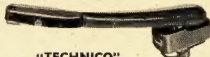
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ENQUIRE FROM YOUR NEAREST DEALER

An Inexpensive Microphone Case.

BY A. M. CREWTER,* VK3SM

An inexpensive Mike Case suitable for the J7 inserts, so popular at the moment, is very easy to construct, and the job can be done with only a few hand tools in the average Ham shack in a few hours. Several have been made at this QTH and the results are very pleasing, and in appearance the completed job is similar to the D104.

The body is a piece of brass tube of 16 gauge approximately 2½" diameter and 1" long. It may pay dividends to get the tube turned off to length although good results can be had with care using a hacksaw and file.

The front and back of the body are made of 16 gauge brass sheet. The back is cut out with a hacksaw, a little larger than the outside diameter of the tube, and soldered in place over a gas flame (apply the solder to the inside of the tube and allow it to run through to the outside).

Most difficult part of the job comes next, and is the construction of the front. Take another piece of the brass sheet, and with a circle cutter cut out a circle the same diameter as the outside of the body tube, then drill four holes

round the outside of the circle so that ⅜" screws will just clear the inside of the tube when the front is placed in position. Using these holes, screw the disc to a block of wood, and again with the cutter, remove the centre of the disc leaving a ring about ⅜" wide. On to this ring solder a piece of heavy brass gauze, keeping it clear of the edges of

the ring so that it will not interfere with the fitting of the front to the tube and also clear of the screw holes.

When the front is cold, the doming of the gauze can commence. To do this hold the front gauze up and with a ball-peen hammer, gently tap the gauze until the required dome has been obtained. Final finishing to the dome can be done with the handle of a file or other rounded block of wood.

The handle is made of a piece of tube ¼" diameter rounded at one end to fit snug against the body of the case. Into this end solder another piece of tube about 1" long and a snug fit inside the handle, leaving ¼" projection to solder into a hole drilled in the body of the case. Again solder from inside the body, as solder on the outside of the case leaves a mark after plating.

With the handle fitted; it only remains to project the assembly holes from the front plate through to the back; drill and tap ⅜" and clean up the case with a file and emery cloth.

After plating, the unit can be packed in, using light sponge rubber or cotton wool. Across the front sew with a couple of stitches some black cloth, fit the cord, and there is a mike to grace the operating table of any Ham shack.

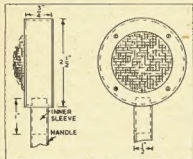


Diagram of Microphone Case showing main dimensions and method of construction.

*42 Carrington St., Pascoe Vale Sth., W.V.

Recommended Valves for 1949.

The following is the Radiotron range of equipment types recommended for use by receiver and amplifier manufacturers in new equipment. Type U52/5U4G has been added in place of type 5V4G for large amplifiers. Type X61M triode hexode has been added as an alternative to type 6J8GA where high gain is required. Type 6J8GA has replaced type 6J8G for an indefinite period. Type 6SN7GT twin triode has been added to complete the range.

The four miniature 7 pin a.c. types are primarily intended for use in auto. sets and sets incorporating f.m., but may also be used in ordinary a.m. receivers. Type 6BE6 is an almost exact equivalent of type 6SA7GT, which has now been dropped from the list of recommended equipment types. Type 6BA6 may be used in r.f. and i.f. amplifiers as an alternative to type 6SK7GT; it is particularly valuable as an untuned r.f. amplifier. Type 6AV6 has improved characteristics but is otherwise an equivalent of type 6BE6 or 6SQ7GT.

Type 6J7G/1620 takes the place of the older type 1603 as a non-microphonic

amplifier, while type 807 remains in the list as a high power amplifier.

A complete range of a.c./d.c. valves with a heater current of 0.16 ampere has been added. These are all octal based. Printed characteristics are now in the course of preparation.

The following types are recommended for use in new equipment (1949):—

1.4 Volt Miniature Battery Range—

- 1R5—Converter.
- 1S5—Diode, pentode.
- 1T4—Remote cut-off r.f. pentode.
- 3S4—Power amplifier pentode.
- 3V4—Power amplifier pentode.

2 Volt Battery Range—

- 1C7G Pentagrid converter.
- 1H4G—General purpose triode.
- 1J6G—Class B twin triode.
- 1K5G—R.F. pentode.
- 1K7G—Duo-diode, pentode.
- 1L5G—Power amplifier pentode.
- 1M5G—Remote cut-off r.f. pentode.

Rectifiers—

- 5Y3GT—Full wave rectifier, directly heated.
- 6X5GT—Full wave rectifier, indirectly heated.
- U52/5U4G—Full wave rectifier, directly heated.

A.C. Range—

- 6A8G—Pentagrid converter.
- X61M—High gain triode hexode.
- 6J8GA—Triode-heptode converter.
- 6G8G—Duo-diode remote cut-off pentode.
- 6J7G—R.F. pentode.
- 6S7G—R.F. pentode.
- 6SK7GT—Remote cut-off r.f. pentode.
- 6U7G—Remote cut-off r.f. pentode.
- 6SN7GT—Twin triode.
- 6SQ7GT—Duo-diode high-mu triode.
- 6B6G—Duo-diode high-mu triode.
- 6V6GT—Beam power amplifier.

A.C. Miniature Range—

- 6AU6—R.F. pentode.
- 6BA6—Remote cut-off r.f. pentode.
- 6BE6—Pentagrid converter.
- 6AV6—Duo-diode high-mu triode.

High-Power Amplifier—

- 807—Beam power amplifier.

Non-Microphonic Amplifier—

- 6J7G/1620—Triple-grid amplifier.

0.16 Amp. A.C./D.C. Range (Octal Base)—

- X76M—Triode Hexode Converter.
- W76—Remote cut-off r.f. pentode.
- DH76—Duplex-diode triode.
- KT71—Power output tetrode.
- U76—Half wave high-vacuum rectifier.

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Push-to-Talk or Break-In

BY RALPH F. HENWOOD*, VK6RL

Quite a large number of Amateurs are equipped to use "push-to-talk" and yet how many do you hear using this method with its obvious advantages. The truth is, not very many, except stations of American origin and a few others. I would like to put the case for a much more extensive use of this method for both DX and local contacts. The one thing that the general public find boring about Amateur Radio is the monologues one often listens to. "How unnatural!" they say and indeed it is when one comes to think of it. This practice is just a heritage from the days when it took some time to change from "Transmit" to "Receive". Yet, in these times of modern transmitter and control methods, one still hears the majority of Amateurs using this long antiquated "technique".

It is quite easy these days for all Amateurs using mains supply to throw from "Transmit" to "Receive" just with a single switch or button on the microphone or table.

Now let us see what the advantages of this system are. First, let me say that the regulations state that we must transmit both our own call sign and the call being worked at least once every five minutes during a contact, so this should be remembered. Let us treat it from the point of a typical contact on one of the Amateur bands.

Let us switch our receiver on and listen on the band which we intend to use. There is a station whom we desire to contact calling CQ or already in contact with some other Amateur. Right, we wait until we hear him say he is listening over such and such a band for any calls. (I am not in favour of using a v.f.o. to slide onto another station and break-in on an existing contact except in case of a civil emergency.) Then we call him in the following way: His call twice and ours twice or three times, then the word "break". Listen on his channel for two seconds. If he doesn't reply, another call of the same duration and again listen for two seconds, and continue this sequence for as long as you think it will take him to cover the band once or twice with his receiver.

Of course, it is first necessary to try to transmit on a frequency that will cause the minimum interference to other Amateurs. Nevertheless with telephony the fact that the carrier is being broken means that you will not interfere to the same extent with other stations as if your carrier were running continuously. By this method, you can hear the desired station immediately he transmits again and cease your own transmissions and save useless calling and interference.

Its advantages during a contact have to be enjoyed to be realised and after

all, in ordinary human contact we do not make long one-way speeches (except politicians) so why should we do it on the air. How galling it is to talk away for some time, go over to the receiver and be told to repeat about half of your remarks as there was interference or a fade-out. This is all eliminated with "push-to-talk" as you can get an immediate answer to your question simply by use of the little word "break" or "over".

Now, what is holding the rest of us Amateurs back. We can cut down QRM, pass and gather information much quicker and more rationally, while making our contacts much more enjoyable, both local and DX. So let us see more Amateurs using it. I know it takes quite a bit of getting used to. One finds oneself drifting back to the old method, just from habit, but with both sides of a contact using it, we will all get used to it and enjoy less QRM and more 100% QSOs.

Also, on telephony, just a little plea for the elimination of Q signals and other abbreviations of c.w. It takes no longer to talk in a normal way which is more intelligible in the ears of the general public who listen to us more than we may realise. Even the use of CQ should gradually fall into the discard for telephony as the P.M.G.'s Handbook recommends the use of the following: "Calling any Amateur Station".

SPivs OF THE ETHER

Several hundred illegal radio transmitters—one source says about 440—are operating in Germany. They work for the black market rings!

The morse speeds show that most of the operators learned their job in the Luftwaffe and the Navy! The sets are mostly from Wehrmacht stocks. Transmitters, ranging in power from 5 to 100 watts, operate by night on the 39, 42, 48, 75, and 80 metre bands.

Typical is a station somewhere near Hanover, which gives regular evening transmissions with details of prevailing black market conditions and prices. The other evening a black marketeer transmitted on it an urgent request for 59 bicycles.

There is obviously an efficient central organisation controlling the black market stations. One transmitter a few weeks back allocated station signals, and these have since been adhered to. Illegal transmitters exist in all four zones of Germany. The British and American authorities are hoping to rob the black radio ring of some of its personnel when, in the near future, licences are issued to Amateurs, hitherto not allowed to indulge in their hobby.

—“Leader” (Eng.)

QUESTIONS AND ANSWERS

Q.10.—K. Bridger would like to know the approximate capacities of the m.o. and p.a. tuning condensers of the BC458. In the circuit diagram published on p. 6 of "Amateur Radio" for May, 1948, these are C63 and C65.

Q.11.—Can anyone give VK3RN information on disposals gear labelled R-9-A/APN-4, such as the frequencies of the fixed tuned i.f. strip and what the whole thing does

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* 16 Hawes St., Northam, West Aust

Suggestions For Reducing Hum

BY R. L. PAECH,* VK5RL

We have all had our distressing moments when something won't work, but I think one of the main problems confronting all on phone is, at some time or other, that laborious searching and testing for hum.

Before tackling the problem it must be understood that it is assumed reasonable care has been taken for the most obvious causes of hum, e.g. adequate shielding of high gain pre-amplifiers and at the same time kept as far away as possible from the r.f. sections of the transmitter, good earth system, microphone leads properly shielded and not unnecessarily long, and heater wiring arranged for minimum hum pick-up.

It is very desirable to find the stage or circuit arrangement that is causing the hum. By far the simplest and most effective way of doing this, is by shorting the grid of each valve commencing with the pre-amplifier. If for instance a troublesome hum can be eliminated by shorting the grid of the valve following the pre-amplifier, it is obvious the trouble is originating in the pre-amp. Checking still further it may be found the hum still continues to be present after shorting the grid of the pre-amp, therefore it is apparent the hum is being induced into the circuit either from the heater cathode or plate circuit—more likely in most cases to be the heater cathode circuit. If the hum cannot be localised we may say with confidence the trouble is lack of filter in the power supply.

Hum may be briefly summed up to be due to one or more of the following causes:—

- (1) Lack of sufficient filter.
- (2) Electro-magnetic coupling.
- (3) Electro-static pick-up in low level stages
- (4) Heater cathode circuits

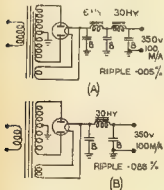


FIG. 1

LACK OF SUFFICIENT FILTER

The cure is obvious. A typical circuit of a well-filtered power supply is shown in Fig. 1a. With the terminal voltage of 350 volts and load of 100 Ma. the ripple percentage is 0.005%. A comparison is drawn between this circuit and a single section filter Fig 1b, where the ripple percentage is 0.085%. In most cases the latter circuit is satisfactory where high gain pre-amplification is not required

ELECTRO-MAGNETIC COUPLING

May be reduced by any of the following methods:—

- (a) The use of non-magnetic material for the chassis.
- (b) Separate power supply chassis.
- (c) Insulating the power transformer from chassis, then making a single earth connection from transformer to chassis.
- (d) Rotating a.f. transformers for minimum coupling.

HEATER CATHODE CIRCUITS

The truly obstinate and possibly the commonest source of hum originates in the heater cathode circuit and can be found in any stage from the pre-amplifier to the phase splitter.

Direct sources include hum leakage through socket capacitances, this of course can be remedied by using a valve with the grid brought out to a top cap, or reduced by wiring the heater pin nearest the grid connection.

Indirect forms of heater leakage can be due to capacitive coupling between heater and cathode or other electrodes within the tube and sometimes due to actual heater emission.

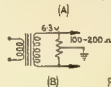
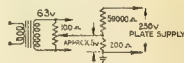


FIG 2

A circuit devised to help eliminate these effects is shown in Fig. 2a. In this circuit a positive voltage of approximately 5 volts is applied to a hum balancing potentiometer across a 6.3 volt heater winding on the power transformer. The positive bias prevents heater emission, and effects of capacitive coupling balanced out by correct adjustment of the potentiometer. It may be necessary to adjust the positive voltage applied to the potentiometer to a higher or lower value than that given, however it is advisable not to use a higher voltage than is required for minimum heater emission.

While not so effective or complicated as Fig. 2a a variable resistance connected across the heater supply with the moving arm connected to earth, as in Fig. 2b, will serve to eliminate much objectionable hum from heater cathode sources. The use of a hum balancing resistor of this kind is recommended in the original design of all pre-amplifiers—it may save many headaches.

Hum due to cathode heater leakage may be reduced by connecting the cathode direct to earth, adjusting the voltage between heater and cathode and by generous by-passing. For obvious reasons the problem of cathode leakage

AN APPEAL

It will be evident to readers that the three issues of November, December and January used considerably more technical material during that period than is normally used.

As a result of this, the Technical Editor's file of technical material is almost completely exhausted, in fact it looks as though he will have to, with the help of his Assistant, write sufficient material to fill the March issue.

I have heard favourable comments about the three issues mentioned and if the standard is to be maintained, you, the reader, will have to do something about it, for it is only with your assistance in providing the technical material required to fill the Magazine each month, can we hope to continue to produce a good technical section in the Magazine

At the present moment the need for technical articles is urgent, so if you have something you can write about, please do so and forward it as soon as possible.—EDITOR.

ELECTRO-STATIC PICK-UP

Due to capacitive coupling, the cure is isolation or shielding. This source of hum is least likely of all to cause any degree of trouble, however it must not be neglected, particularly in the grid circuit of a high gain low level pre-amplifier.

* 14 Fernleigh St., Underdale, Sth. Aust.

becomes a little more involved when the source is a phase splitter stage. The writer, having trouble from this source resolved to find a method of neutralising the hum which apparently was due to heater cathode leakage. A most unconventional circuit resulted (Fig. 3) nevertheless most effective, giving approximately 15 db hum reduction and only 3 db loss in gain, the difference in frequency response negligible. Briefly the operation is as fol-

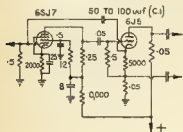


FIG. 3.

lows: A small portion of the hum voltage appearing at the cathode of the phase splitter is fed to the grid of the preceding stage, amplified and returned out of phase to the source at the cathode. The use of a capacity much larger than that shown at C1 will result in serious loss of gain and reduction in high frequency response.

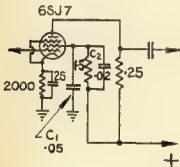


FIG. 4

In conclusion a circuit is shown (Fig 4) whereby another, yet more conventional method is used to neutralise hum. By means of a capacitive voltage divider the predetermined hum is fed to the screen, being consequently 180° out of phase with the hum voltage appearing at the plate of the valve. The values of C1 and C2 may have to be found by experiment for the greatest hum reduction, those suggested will in most cases be satisfactory.



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Australian National Research Expedition To Heard Island

AROUND THE SHACKS

VK2ABC

This Expedition is leaving Australia during January 1949, to further the development of Antarctic research, and will be stationed at Heard Island for a period of 12 months, cut off completely from the outside world except by radio.

Although only a small party of 12 members, it is interesting to note that there are two Amateur Radio boys amongst them, VK4FE and VK3VU, and it is their intention, whilst down at the land of Penguins to study, as far as possible, the conditions there.

Arthur, VK4FE, for the past 20 months, has been stationed away up in North Queensland, at Townsville, and several G stations will remember him, especially G3BUU, whose daily skeds during last July and August were very much in common.

Ron, VK3VU of Shepparton, has not been very active, as he has put his studies before Ham Radio, but we all wish him to be able to put B.E. after his name very shortly after his return.

New call signs have been allotted for Heard Island, Arthur will use VK1FE and Ron VK1VU, and any Hams can look forward to a QSO any time the stations are on the air. The President of the Victorian Division of the W.I.A. is arranging skeds, etc., having gone to a lot of trouble in contacting the powers that be on long range predictions which should be a great help to the VKs in general. Assistance is also being given by the Met. Officers on Heard Island. Arthur is the Engineer to the Party, and Ron is Chief Wireless Officer.

It is interesting to note some of the equipment that is being taken to the island. Although restricted to 100 watts, they will have to rely on the receiver to do the bulk of the work. The receiver selected is the English Eddystone 640, which covers all bands, and is calibrated on the Ham frequencies, which will be of great help down there. This receiver will be tested thoroughly to find out how it will react to the climatic conditions. The 640 is a stock model, no weather proofing or dope having been used.

Regarding the transmitter, Arthur is taking two separate jobs with him—one covering 7-14-28 Mc., and the other 50-144 Mc. Ron has yet to make up his mind, but we believe that he has something up his sleeve. He says his big job with the 813 is too heavy to carry around.

As none of these frequencies has been exploited on the Islands, it will be interesting to know how they are being received in different parts of the world. Any listener hearing signals from VK1 is asked to get in touch with VK3ML of the W.I.A. Victorian Division, who is establishing a key station, and any reports satisfying the stations'

log, will be acknowledged. Amateurs in direct contact with VK1, are also asked to contact the key station, so that a full report can be completed. Please remember, there is NOT any mail service at Heard Island.

Heard Island was discovered in 1853 by Captain Heard, in the American ship "Oriental." It is swept by gales the year round, except for a possible respite of a week or two during December. It is treeless, and the only vegetation is moss. As late as 1920, the island had an active volcano, so that the cliffs are either black yellow, or glacier ice. It is the home of penguins and sea elephants, which are there in abundance. The location of the Island is 53° South 73° East.

In passing, it is to be hoped that Doctor R. Allison, of Sydney, who is Medical Officer to the expedition, is successful at the next examination for a Ham Ticket, so as to allow him to have a VK1 call sign before leaving. Let us all wish Arthur, Ron and Bob all the best of DX and plenty good luck in their 12 months of isolation in the land of penguins and sea elephants.

TENTATIVE SCHEDULES

The following times are GMT, plus five hours:—

- 7 Mc.—1200-1300, 1400-1600 hrs
- 14 Mc.—1000-1200, 1600-1700 ..
- 28 Mc.—0800-1000, 1800-2000 ..
- 50 Mc.—Continuous Listening
- 144 Mc.— " " "

These schedules will be divided by VK1FE, VK1VU and probably Doctor Allison. If successful at examination 50 and 144 Mc. watches are being undertaken by the Wireless Operator on shift duty, anything breaking through will be transferred to VK1FE or VK1VU for action. Schedules will be altered according to conditions.

NEW LINER MAKES RADIO HISTORY

CARONIA[®] FITTED WITH SPECIAL EQUIPMENT

When the new 21,000-ton Unimac White Star liner "Caronia" leaves Southampton for her maiden voyage shortly she will rock her way in ship-to-shore radio telephony. The equipment designed by Standard Telephone and Cable Ltd. for the Caronia is a large, post-war liner, will make passengers to telegraph to Europe and America from any part of the world. Passengers will be able to take a 15-minute rest-room in public telephone booths. One of the latter includes a loud speaking telephone, a feature likely to prove extremely popular with families or groups of friends.

This new system will make her the first ship in the world to be fitted with radio transmitters and receivers for single side band telephony, a system hitherto used only on intercontinental radio telephone circuits. It gives improved clarity of speech but has never before been applied to passenger ships.

Another "Old Timer" who still finds plenty of time to spend on the air is Fred Stark VK2ABC. Except for the war years, Fred has been an active Ham since 1931 when he held the call 2XV. In 1935 this was changed to 4XV, and later to 2ABC on Fred's return to Sydney. In 1947 Fred operated from Singapore under the call of VSIAZ.

At present 2ABC is active on 20, 10 and 6 metres with a five stage transmitter. The complete transmitter, including power supplies and speech equipment, is rack mounted and is completely remote controlled from the operating table. The transmitter consists of a 6V6 crystal oscillator, 6V6 multiplier, 6V6 doubler, 807 buffer and an 834 final with 50 watts input. Modulators are a pair of 807s class AB. Also mounted in the transmitter rack is a c.r.o. for constant modulation monitoring. Two receivers stand on the operating table, a 9 tube super for 6 metres, and a 9 tube super for all band coverage.

A half wave dipole is used for 20, while a three element medium spaced beam on 6 and a two element wide spaced beam on 10 metres do an excellent job. At present 2ABC is mainly active on 6 metres participating in the v.h.f. contest and during the recent band opening on Sunday 5th December managed to make 210 points for the day's operating.

VK2WJ

John Peell, VK2WJ, has been active since 1928 and can be rightly termed an "Old Timer."

At present he is active on four bands, 28, 50, 144 and 288 Megacycles with a definite preference for the v.h.f. spectrum.

The main transmitter, which operates on 28 or 50 Mc., is mounted in a standard rack. It consists of a 6L6 triode oscillator, 6L6 doubler, 807 doubler and push pull 834s in the final with an input of 90 watts. The modulators are a pair of 807 class ABs.

A converted SCR522, also rack mounted, is used on 144 Mc. and a self-excited oscillator using a pair of 7183s puts out an excellent signal on 288 Mc.

The receiving side is well catered for with an H.R.O. to cover all frequencies from 200 Kc. to 30 Mc., a seven tube superhet. for 50 Mc., a converted AR301 receiver for 144 Mc. and a three tube super-regen for 288 Mc.

A half wave doublet antenna is used for 28 Mc. and four element beams on 50, 144, and 288 Mc. A three element wide-spaced beam is under construction for 28 Mc.

THE CASE OF QUALITY Versus COST

We have been surprised to find a number of hams who consider that Eddystone Components have one disadvantage—their price ! These hams agree that Eddystone Components are undoubtedly the finest obtainable—but—they cost more than other components. Now let's face the facts ! Those few extra shillings you pay for Eddystone Components repay you tenfold ! For those few extra shillings you get precision-built components that last longer and give better service—reliable components of unequalled quality,

with the highest possible performance—components that give no trouble; but every satisfaction. So you see, with everything considered, Eddystone Components actually cost LESS in the long run than cheaper components. We believe, and we're sure you'll agree, that you only get good value when the article you buy gives you your money's worth—gives you the best service possible for as long as possible, without any trouble, without any further cost. And Eddystone Components do just that !

Don't despair if at present you're not getting the best results—switch to Eddystone and you'll realise what a pleasure it is to work with first-class components.

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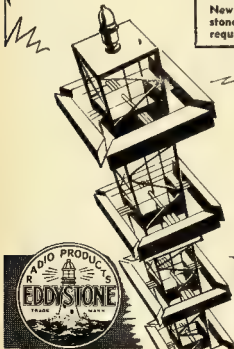
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THE LATEST, MOST DEPENDABLE
COMPONENTS for FM, AM, & PULSE

The B.E.R.U. Contest, 1949

GENERAL RULES

1. The event will be divided into three sections, namely: (a) Senior (High Power) Transmitter Section, (b) Junior (Low Power) Transmitter Section, (c) Receiving Section. The three sections will be run concurrently.

2. The Contest is open to all British subjects living within the British Empire and British Mandated Territories and to British Occupational Forces serving in any part of the world who are fully paid-up members of either the R.S.G.B. or one of the British Empire Societies. All entrants agree to be bound by the Rules of the Contest.

3. Entrants who are not members of the R.S.G.B. must certify in the declaration that they were fully paid-up members of their local society at the time of the Contest.

4. An entrant not located in one of the prescribed Prefix Zones shall be considered as being in the Prefix Zone nearest to his station.

5. Contacts with, or reports from, ship or unlicensed stations located in countries where licenses are obtainable will not be permitted to count for points. The decision as to whether a station is to be classed as unlicensed will rest with the R.S.G.B. Contest Committee.

6. Only 10 entrants will be permitted to operate his equipment for the duration of the Contest.

7. A trophy will be awarded to the fully paid-up member of the R.S.G.B. securing the highest number of points in each section of the Contest. Certificates of merit will be awarded to the first three stations in each section and also to the leading station in each Prefix Zone, providing at least three reports have been received from the zone in question. In addition a second certificate will be awarded to each zone provided ten or more entries are received from that zone.

8. The declaration at the foot of the Entry Form must be signed by the operator, who will be recorded as the competitor.

9. Entrants must provide their own log sheets which together with the analysis sheet, must be legibly written or typed as set out in the sample appended. Incomplete entries will be disqualified.

10. All entries must be posted with seven days of the close of the Contest. No entry will be accepted at R.S.G.B. Headquarters, New Rushin House, Little Russell Street, London, W.C.1, later than June 11, 1949.

11. The judging of entries will be carried out by the R.S.G.B. Contest Committee. The President's decision will be final in all cases of dispute.

12. No correspondence can be entered into regarding any decision made by the President or Contest Committee.

13. The Contest will extend from 0001 G.M.T. Saturday March 6, 1949, to 2359 G.M.T., Sunday March 6, 1949.

14. Contest operation during local hours of restrictions in the use of electricity for stations which have been publicly announced is forbidden. The duration of any such restrictions will be recorded on the entry form.

RULES FOR THE TRANSMITTING SECTIONS

1. Fifteen points will be scored for the first contact on a specific band with a British Empire station located in any Prefix Zone outside the competitor's own zone. Fourteen points will be scored for the second contact on the same band with the same zone, thirteen points for the third contact, and so on, to the fifteenth contact, which contact will score one point. All contacts with that particular zone on that band thereafter will count one point each. This scoring procedure will be repeated on each band to encourage multi-band operation.

2. Only one contact with a specific station may be made on each band during the Contest.

3. The Contest is open for two-way A.I. (c.w.) contacts only, on the following frequency bands, viz.: 2.5, 7, 14, and 28 Mc., providing the input to the valve or valves delivering power to the aerial is not in excess of that specified on the competitor's license and in no case more than 150 watts in the Senior (High Power) Section and 25 watts in the Junior (Low Power) Section, and providing the entrant has permission to operate his station on the band or bands in question.

(This rule excludes the use of the 27 Mc. band).

4. The conditions laid down in the entrant's transmitting license shall be observed.

5. Aerial and antenna consisting of six feet must be exchanged before points may be claimed. The serial number is made up of RST and three zeros.

ents denoting the number of the contact, the first contact being 001, and so on.

6. Entrants receiving consistent tone reports of less than 78 will be disqualified.

7. Specially appointed Band Monitoring Stations under the auspices of the R.S.G.B. will be active during the Contest. Any station reported off frequency by these checking stations will be disqualified without appeal.

RULES FOR THE RECEIVING SECTION

1. The scoring system will be the same as for the transmitting sections, viz. fifteen points will be scored for the first station heard on a specific band within any Prefix Zone outside the competitor's own zone. Fourteen points will be scored for the second station heard on the same band for the same zone, and so on. This scoring procedure will be repeated on each band to encourage multi-band operation.

2. Before points can be claimed, the following information must be logged: (a) Call of station heard; (b) Call of station being worked; (c) Entrant's report on the signals of the station heard (RST); (d) The Serial Number given by the station heard to the station being worked.

3. Q and Yes calls will not count for points.

4. The same station may only be logged once on each band during the Contest.

WARNING

Last year 8 competitors were disqualified for late entries, 8 for late entry and no analysis sheet, 10 for no analysis sheet, 5 for no signed declaration, 4 for no declaration or analysis sheet, 1 for log inaccuracies, and 1 for excess power.

FORMAT OF THE B.E.R.U. ENTRY FORM

B.E.R.U. Contest, 1949.....Section
Name (Block Letters).....Call sign.....
Address.....
Transmitter.....
Input Power to last valve(s).....
Receiver.....
Aerial System used.....

Date	G. M. T. Contact Established	Band Used Mc.	Call sign of Station Worked	Serial Numbers		Points Claimed
(1)	(2)	(3)	(4)	Sent (5)	Received (6)	(7)
				001		
				002		
				etc.		

TOTAL

DECLARATION—

I hereby certify that my station was operated strictly in accordance with the rules and spirit of this Contest, and I agree that the decision of the President, R.S.G.B., shall be final in all cases of dispute. Date..... Signed.....

If an entrant is a non-member of the R.S.G.B., he must sign the following additional Declaration:—
I hereby certify that at the time of the Contest I was a fully paid-up member of.....

Date..... Signed.....

RECEIVING CONTEST

The entry form for this Contest should be prepared on the Times set out above with the following amendments:—

Column 2: G.M.T. station heard.
Column 4: Station heard.
Column 5: Entrant's report on station heard.
Insert new Column: Station being worked.
Column 6: Serial number given by station heard to station being worked.

PREFIX ZONE CHART AND SPECIMEN SCORE ANALYSIS SHEET

Prefix Zone	Me.		Me.		Me.	
	Contacts	Points	Contacts	Points	Contacts	Points
AP, VU2						
DZ, EI, G, G, G						
GD, GI, OM, OC						
44, VS8						
MD9, SY0						
MD1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100						
MD9, VS8, VU7 (VS8)						
VX1						
VX2						
VX3						
VX4						
VX5						
VX6						
VX7						
VX8						
VX9						
VX10						
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VX97						
VX98						
VX99						
VX100						
Totals						

NOTE—Some of the above prefixes may be out of date at the time of the Contest.

Make sure you have read the Rules carefully and do not forget to sign the Declaration at the foot of the form.

Suggestions for future Contests are invited.

15th A.R.R.L. INTERNATIONAL DX COMPETITION

This Contest is run over four week-ends, each 48 hours long: two for phone work and two for c.w. The c.w. section starts at 2400 G.C.T., Friday, February 11 and Friday, March 11, and 2400 G.C.T., Sunday, February 13 and Sunday, March 13. Phone section starts at 2400 G.C.T., Friday, Feb. 11 and Friday, March 11, and 2400 G.C.T., Sunday, February 13 and Sunday, March 13.

ALL-EUROPEAN DX CONTEST RESULTS

Advice has been received from V.E.R.O.N. that the following is the results of the first All-European DX Contest. Congratulations to the two Australasian winners.

G.W.	Station	QSOs	Count	Bands	Points
1	VK4BD	74	81	8	4623
2	VK4AP	61	86	8	4209
3	VK4JX	55	86	8	4128
4	VK4RO	19	13	2	684
5	VK4RU	17	10	2	610
6	VK4FE	14	10	1	480
7	VK4XX	14	6	1	323
8	VK4W	6	5	2	40
9	VK4KX	2	1	1	16
10	VK4JL	3	2	1	12

PHONE	Station	QSOs	Count	Bands	Points
1	VK4RU	2	1	1	8
2	VK4QX	2	1	1	8

Emergency Communications

(Victorian Division)

SOUTH WEST ZONE—GEELONG DISTRICT

On 12th December the emergency network, working in conjunction with the Geelong Bush Fire Brigade, staged a combined field test. Prior to the test, two lectures were given at the Radio Club on 8th December by Mr J. McConnell (Message Handling) and Mr Lawry (Map Reading) so that a complete understanding would exist between all persons participating in the exercise.

The S.W. band was utilised, as previous tests had shown that a satisfactory coverage of up to 30 miles was possible without interference from a.p. distance effects.

The network was arranged with a main station (3BP) situated in Geelong proper and in telephone contact with the Regional Office, and three outer base stations 3WT, 3APG and 3JC working on 3550, 3505 and 3440 Kc. respectively. The main station (3BP) maintained a watch on these frequencies, using three receivers, so that messages from one or more outer base stations could be suitably received and routed. The main station transmitter was arranged to operate on any one of the three frequencies mentioned above by utilising a v.f.o. system.

Set on 3VP, 3JJP, 3AKE, 3AJL, 3ABW and 3ADP acted as mobile or portable stations and were suitably arranged and controlled by the outer base stations.

The mobile or portable stations mostly used Type A Mark 3 units, the outer base stations Type 3 Mark 2 units, and the main station a three mitter and three receivers. Whip aerials were mostly used on all fixed stations, some being top loaded to improve radiation characteristics.

A complete analysis of the test showed that the operation was very satisfactory and the Regional Office has requested that a similar field test be

repeated in late January so as to thoroughly consolidate the wireless and fire fighting teams in case of an actual outbreak.

NORTH EASTERN ZONE—BOGONG DISTRICT

Emergency communications were set up on the 22nd November when the outbreak for a bad loss on Mount Bogong was established.

The search party made a base from which they conducted their search. On the night of 22nd, VK4BX, Vic Bond, took his Type 3 to the base at Mounts Creek and kept contact with the S.E.C. Station in Bogong. The S.E.C. Station was operated by Eric Martin, VK3HN, and communications were held until the area of search altered. Operation was again conducted on the night of 23rd/24th December, the bad being found next morning when he stopped a bus in the Glover Dam area.

RUTHERGLEN DISTRICT

When a fire started on the railway line approximately 25 miles south of Springburn on 22nd December, Henry Fleming VK3HP attended and was in contact with VK4UR (Box Hill). 3UE rang the Victorian Railways' Telegraph Office at Spencer Street and they arranged to contact the Springburn Station Master via their own land lines so that suitable action and equipment could be dispatched to the fire area.

Eight minutes elapsed from the time 3HP set up his rig to the time the Station Master at Springburn was advised from Spencer Street. Ken Rankin VK3KR (Benalla) also acted as a stand-by station and he remained on watch till the fire was extinguished.

3HP's equipment is mounted in a trailer and consists of transmitter VTRA consists of 6PD crystal oscillator, 8W power amp., plate modulated by an 807. The glow circuit of which is excited

from carbon milk and transformer. Receiver is a 6 valve super heterodyne. Power supply is a generator, battery operated. The antenna is wound on a drum and all equipment necessary for the aerial erection is carried in the unit. The complete portable station can be set up in the road two minutes after receiving a call for assistance, and on arrival at the scene of operation the antenna can be erected and the station functioning within four minutes. 3HP can be contacted on 7050, 7013 and 7115 Kc.

AVENEL DISTRICT

An outbreak of fire in this district was due to a theodolite which acted in the area on the afternoon of Friday, 14th January, 1949. John Miller VK3AP (Avenel) and Ken Skerper (Associate member W.L.A.) rendered valuable assistance to the local Bush Fire Brigade.

3ABO, operating from home, acted as a base station and was able to handle messages from the mobile unit, John and Ken were on continuous duty from 1100 hours Friday 14th to 1800 hours on Saturday 15th.

The value of radio communication was demonstrated when the mobile unit reported that another outbreak had been detected in an adjacent area and reinforcements were dispatched immediately from Avenel, thus saving valuable time and many miles of our driving. 3ABO and the mobile unit operates under a licence allotted to the local league.

The test and emergencies mentioned above are examples of the true spirit of Amateur Radio in general and credit is due to the Emergency Communication Network in particular for their readiness to assist. If you can help in this way get in touch with Reg Bush VK3BL, Wireless Institute (Victorian Division), 132 Queen St., Melbourne.

TRANSCIVERS.

BENDIX—SCR 222
Crystal controlled operating frequency 100-135 Mc. With valves. 1-125, 1-100, 1-12AN, 1-12C8, 2-6C6, 3-600D, 2-12SGT, 4-12AG. CONDITION GOOD. £12/10/-
TR1140 H.F.
New and complete with valves. English equivalent SCR 522 4-EP50, 4-EL32, 2-EP18, 4-ET1192, 1-EA50, 2-EP18, 2-EP50. £8/10/-.

4.5 to 6.6 m/c T R 9 D:
Receiver—6 valves. Transmitter—3 valves. Complete with valves, less batteries 2-VR18, 1-VT50, 2-VY21, 1-VK27, 2-VR21, 1-VR22. £4/15/-
T R 1366
17-20 m/c. Valves—3-EP50, 1-6R6B, 1-CV51, 1-EA50. Contains 1-12 gang Condenser. 1-3 Gang Condenser. Complete with valves, less power supply CONDITION GOOD. £5/-

TRANSCEIVER TYPE APN2
U.M.F.—18 valves. 7-6AC7, 1-6V6, 1-954, 1-5U4, 2-43L7, 1-58MT, 3-956, 1-2C26. Contains 24 volt Bleeder Motor, Cells, 1FT Condensers, etc. Complete with valves. £10/10/-.

RECEIVER TYPE CDE
GLIDE PATH RECEIVERS (new)
H.F. Receiver, approx. 30 Mc. Contains 3-4C6 valves, resistors, 1FT Condensers, transformer, etc. £3/10/-.

RECEIVERS.

TYPE CW.
AIRCRAFT RECEIVER. Contains 6 valves. 4-7B, 1-1642, 1-77, 4 Gang Condenser complete with 24 volt variable dist £5. Extra coils. Condition good. 15/-.

Western Electric U.M.F.
4 valve midget type. Brand new 234 to 258 Mc. Valves—3-954, 1-955. £6/-

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Contains 8 valves—3-7C7, 1-RK34, 2-120A3, 2-1201. Condition good 24 volt input —£40 valve—£10. Motor Generator and many useful parts, resistors, condensers, etc. £4/15/-

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Complete with EF50, 2-6H6, 1-VR138. Cathode Ray Tube 6 Shield—Shift controls, etc. Complete in metal can, with viewfinder. £6. Postage 1/6. 3/6. FREIGHT FORWARD.

AIRIAL COUPLING UNITS
Contains 0-300 M/c R.F. Meter, 3-gang 500K mfd. variable condenser and resistors, variometer, etc. £2. Vic. 3/6; N.S.W. 1/3; S.A. TAS. 3/6; W.A., Q.L.D. N.T. 7/9

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24 volt 1000 watt £12/10/-
24 volt 500 watt £10/10/-
12 volt 1000 watt £12/10/-
12 volt 500 watt £10/10/-

COAXIAL CABLE.
9/16" outside diameter, 73 ohms. Impedance. 20 yard coils. £1. Postage and packing. Vic. 1/3; S.A. TAS. 1/6; W.A., Q.L.D. N.T. 2/3.

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Wireless Direction Finding by Keen. Cost 27/6. Our price 8/6
R.A.F. Notes for Wireless Mechanics. Our price 5/6
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The Radio Amateurs' Handbook. Published by Radio Relay League
Radio Receiver Designs—Sturley 19/6

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NEW SOUTH WALES
 Secretary—Dick Dowe (VK2RP), Box 1734, G.P.O., Sydney
 Meeting Night—Fourth Friday of each month at Science House, Corner Gloucester and Essex Sts., Sydney
 Divisional Sub-Editor: H. P. Treharne, VK2BM, 5 Wiares St. Burwood

Zone Correspondents—North Coast and Tablelands
 P. A. H. Alexander, VK2QA, Hill St., Port Macquarie; E. J. Baker, VK2PJ, 13 Sefton Hamilton, Newcastle; C. G. Gifford and Lukas H. Hawkis, VK2YL, 27 Comfort Ave., Cessnock
Western: G. J. Russell, VK2JA, 116 Bogan St. Mingen; **South Coast and Tablelands:** S. H. Rayner, VK2DO, 42 Pettit St., Yass; **Southern:** E. Arnold, VK2JO, 673 Fortess Hill Ave. A. Bury, Western Suburbs; A. C. Pearce, VK2JMB, 40 Harbourside Ave. Five Oaks; **Eastern Suburbs:** H. Kerr, VK2AX, No. 4 Flat, 144 Hewitt St. Bronte; **North Sydney:** L. D. Currie, VK2AM, 779 Military Rd., Mosman; **Geelong:** J. A. Acherman, VK2LH, 32 Park Rd., Carlton; **South Sydney:** V. M. H. Wilson, VK2VW, Cr Wilton St. and Marine Pde, Maroubra

VICTORIA
 Secretary—C. C. Quin, VK3WQ
 Administrative Secretary—Mrs. D. Cross, Lew Court Chambers, 191 Queen St., Melbourne, C.I.
 Meeting Night—First Wednesday of each month at the Radio School, Melbourne Technical College
Zone Correspondents—North Western: B. R. Mann, VK3BA, Camberwell; **Western:** C. C. Stirling, VK3VY, 12 Stanes St., Geelong; **South Western:** B. Seccombe, VK3BI, 17a Ripley Street North, Balaclava; **Eastern:** J. A. Miller, VK3BG, "Gravel" Avenue, Pa North-West; **Geelong:** Harry Dobson, VK3MF, 42 Walnut Ave., Mildura; **Eastern Zone:** J. D. Chilvar, VK3JO, 20 Smith St., Geelong

FEDERAL DX CC NEWS

We are pleased to report that two applications have at last been received from VK3JD and VK6RU for the Phone Award and are still being considered. Other applications for the Open Award are to be heard from VK3NS and VK6OP. As the number of members of the DX CC are increasing so rapidly, it will only be possible to list the first ten in each section and annually to publish a complete list. New members will be listed as they apply. Intending applicants are advised to carefully read the Rules of the DX CC, as contained in "A.R.", for August 1947 and Federal Notes "A.R.", April 1948, as non-compliance with the Rules will cause considerable delay.

PHONE		
NO		
CW	Zones	Countries
VK3BZ (14)	..	39 137
VK3ON (8)	..	88 125
VK3VW (12)	..	89 123
VK3KE (10)	..	88 127
VK3ED (7)	..	40 110
VK4EL (24)	..	19 110
VK4DA (80)	..	39 118
VK3LR (1)	..	40 112
VK4CH (22)	..	38 106
OPEN		
	Zones	Countries
VK3BZ (5)	..	39 150
VK3DI (4)	..	40 151
VK3CJ (3)	..	38 136
VK3HO (4)	..	38 136
VK3JE (16)	..	39 135
VK3KE (10)	..	39 135
VK3ED (7)	..	38 123
VK4EL (24)	..	38 122
VK4DA (80)	..	39 116
VK3LR (1)	..	37 115

New Member
 VE1DO (23) .. 101
 Figures in parenthesis indicate membership to DX CC.

WI REBROADCASTS

All Amateurs are urged to keep these frequencies clear during, and for a period of 15 minutes after, the official broadcasts.

VK3WJ—Sundays, 1100 hours EST, 7195 Kc and 2000 hours EST, 50.4 Mc No frequency checks available from VK3WJ Intra-State working frequency, 7175 Kc.

VK3WJ—Sundays, 1130 hours EST 7195 Kc Individual frequency checks of Amateur Stations given when VK3WJ is on the air

VK4WJ—Sundays, 0930 hours EST simultaneously on 3750 Kc, 7190 Kc, 14,342 Kc, 52.4 Mc and 144.138 Mc. Frequency checks are given two nights weekly, and the times are announced during Sunday broadcasts. 7010 Kc channel is used from 1000 to 1030 hours each Sunday as VK4 query service to 49WJ

VK5WJ—Sundays, 1000 hours EAST on 7195 Kc. Frequency checks are given by VK5DQ on Friday evenings on the 7 and 14 Mc bands

VK6WJ—Sat. 2 p.m. Sun. 9.30 a.m. W.A.S.T between 7000 Kc and 7200 Kc. No frequency checks available

VK7WJ—Second and Fourth Sundays at 0830 hours EST on 7174 Kc. No frequency checks are available

SILENT KEY

EX-VK3TH
 We announce with regret the passing of George F. Thompson ex-VK3TH on Sunday, 16th January, 1949.

Due to changes brought about by the Atlantic City Convention, some countries have altered their amateur prefix to conform with the new prefix allocations. So far the following sets have been altered:

B	..	China
DU	..	Philippine Islands
JA	..	Japan
..	..	Caroline Islands
KK	..	Ryukyu Islands, i.e. Okinawa

The above prefix alterations may be now included in the list of official countries in last month's "A.R.". No doubt other countries are due to change also and we will give announcements as they come to hand.

Noel Roberts, VE9HR has advised that it seems most likely that Norfolk Island will be created as a new country in the very near future, and application is also being made for the inclusion of Heard Island as a new country. Elsewhere in this issue will be found the relevant details concerning VK1FE and VK1VT, the only two official VK1 calls, as VK1AA will not be received.

NEW ZEALAND AMATEUR FREQUENCIES

The following are the frequencies released to ZL amateurs as from the 1st January, 1949

For General Use—	
3.6—3.9 Mc. A1, 3, s.s.c.	
3.7—3.8 Mc. A1, 3, s.s.c. (phm or minus 3 Mc.)	
5.0—5.4 Mc. A1, 3, s.s.c.	
5.0—5.2 Mc. n.b.f.m.	
5.2—5.4 Mc. f.m., p.m.	
14.4—14.8 Mc. A1, 3, s.s.c., f.m., p.m.	
6.0—4.60 Mc. A1, 3, s.s.c., f.m., p.m.	
4.4—4.60 Mc. A6	
4.0—4.12 Mc. A5 experiments.	
12.0—12.90 Mc. A5 experiments.	
12.15—10.80 Mc. A1, 3, s.s.c., f.m., p.m., pulse	
25.0—24.50 Mc. A1, 3, s.s.c., f.m., p.m., pulse	

QUEENSLAND
 Secretary—G. G. Augustineau, Box 6387, G.P.O., Brisbane.

Meeting Night—Last Friday of each month at the State Service Building, Elizabeth St., City
 Divisional Sub-Editor: F. H. Shannon, VK4SN, Mendenhall Ave. Rossmore

SOUTH AUSTRALIA
 Secretary—E. A. Barber, VK5MD, Box 1234K, G.P.O., Adelaide

Meeting Night—Second Tuesday of each month at 17 Wymouth St., Adelaide
 Divisional Sub-Editor—W. W. Parsons VK5PS 483 Esplanade, Henley Beach

WESTERN AUSTRALIA
 Secretary—W. E. Coxon, VK5AG, 7 Howard St., Perth

Meeting Place—Pebury House Cnr St George's Ter and King St., Perth
 Meeting Night—Watch the Monthly Bulletin
 Divisional Sub-Editor—VK5WT, Mr D. Couch, Mary Street, Watermans Bay, W. Australia

TASMANIA
 Secretary—J. Brown, VK7BJ, 12 Thraze St., New Norfolk, Tasmania, 1928

Meeting Night—First Wednesday of each month at the Photographic Society's Rooms, 163 Liverpool St., Hobart

Divisional Sub-Editor—C. Connor VK7CT, 245 Elizabeth St., Hobart

North Western Correspondent—C. Wright VK7LZ 3 Knight St., Launceston

3300—3900 Mc. A1, 2, s.s.c., f.m., p.m., pulse
 3500—2540 Mc. A1, 3, s.s.c., f.m., p.m., pulse
 10000—10500 Mc. A1, 3, s.s.c., f.m., p.m., pulse

For High Frequency Permit Holders Only—
 7.0—7.5 Mc. A1
 14.0—14.4 Mc. A1, 3, s.s.c., f.m., p.m., pulse
 14.3—14.4 Mc. A3, s.s.c. (by special permit)
 28.0—29.7 Mc. A1, 3, s.s.c.
 29.0—29.7 Mc. n.b.f.m.

MORSE CODE PRACTICE TRANSMISSIONS

It is hoped in the very near future to conduct more practice transmissions from W.I.A. official stations on the 80 and 40 metre bands on a proposed frequency of 8504 Kc. The roster of stations is yet to be completed but as soon as final arrangements are made, the W.I.A. stations will make the necessary arrangements. These transmissions will be conducted at various periods so that all may avail themselves of this service.

DX OPERATING CODE

We have placed an order with the A.R.R.L. for 5,000 copies of a new printed card on DX Operating Tables. It has been advised that these cards are in the mail and they will be distributed to the Divisions as soon as received. We cautioned this excellent code to every DX man as a "must" for his operating table. They are to be issued free with the complements of the A.R.R.L.

FREQUENCIES FOR GREAT BRITAIN

Besides those bands already in use in Great Britain, the following bands have been released as from the 1st January, 1949:
 48.5—50 Mc. (until the 31st March 1949)
 144—146 Mc. 25 watts
 144—146 Mc. on a non-interference basis
 2800—480 Mc. 25 watts (non-interference basis)
 1215—3500 Mc. as for 420 Mc.
 3500—4450 Mc. 25 watts input
 8350—8515 Mc. 25 watts input
 10000—10500 Mc. 25 watts input
 P.M. is allowed on all bands above 28 Mc. except 144 Mc.

FRENCH ANTARCTIC EXPEDITION

The following information has been received from the R.E.F.—
 "The Antarctic Expedition, which left France in

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VICTORIA

The State Convention of this Division will be held on Saturday, 19th February, commencing at 10 a.m. in the Meeting Room of the Chamber of Manufacturers, 312 Flinders Street. Arrangements have been made for lunch and all City and Country Members are invited to attend. If your XYZ or YL want to come a long, the ladies' committee have made arrangements to entertain them at afternoon tea. Quite an interesting evening has also been arranged for the Dile, so you are assured of a good time. Sunday 20th February, will be taken up by a Field Day, Sports Meeting for NYLA and three other, cancelled, until later, etc. In the lead at the same place in last year, that is National Park, Yare Bend, all members will have received level notifications by now if you intend taking part in the Field Day don't forget to take out your portable permit. A competition has also been organised for the best pie of equipment.

The Radio Amateurs Group which is held at the Club Room prior to each General Meeting bring along your sandwiches and enjoy a chat from 6 p.m. onwards.

An exhibition of Amateur Equipment is being organised by this Division to be held later on in the year, so get to it chips and do up or rebid it. List of pieces of equipment and you may win a prize. Further details will appear later.

FREQUENCY MEASURING TEST

The Vic area Division of the W.I.A. will conduct a Frequency Measuring Test on 10th March (Thursday) and 15th March (Friday).

Signals will be transmitted by VK3W1 in the 7 Mc. band and five different frequencies will be transmitted on each night.

Members of the Institute will be eligible for Awards which will be based on the overall accuracy of measurement of the test signals transmitted as compared with readings taken by a professional professional frequency measuring organisation.

A prize of £8 will be awarded to the competitor submitting the report having the highest average accuracy, and £5 will be awarded for the report giving the second highest average accuracy. In order to encourage participation by members using home-built equipment, a special award of £2 will be made to the competitor who, in the opinion of the judges, has submitted a report of outstanding merit.

For further details, keep tuned to the Sunday broadcast from VK3W1 and watch for the March issue of "Amateur Radio".

SOUTH WESTERN ZONE

Latest news from L.E. & W. Zone is that Bob 3RU will put out good signals on 40. Bob had 3RU up for a few days. Jack AWW has gone portable, also a few others from Ballarat. Murray 3AMF was working 3RU. 3AQO was portable, 3L signals were good both ways. Murray's wire recorder is now 100 per cent. Vern 3VE signals are down, what's the matter Vern, need more herbs up that wire. Jack 3T still sounds the key on 10 and 21 with more new countries up, in between work on farm. 31G and 3MG are still, after that rare DX contact, 3CL works a little on 80. Frank 3ZU has now 15 watts, 3CG wire up and now working some super DX on both phones and c.w., good work Frank, hope to have a QSO on 40 soon. Ted 3PS, the old clock, still in on 21 and with crystal control has F80 receiver working 100 per cent now on 80. Les 3DX has started on new three element rotary beam on top of a 15 ft tower and will use both c.w. and phone. 3EQ Norm still like a good QSO on 40, has new crystal, mike, sounds the berries

Norm 31F Harry is able to work some of the rare DX on 31F with vee beams and a hot receiver.

3VA, the big little man from Ballarat, is still home tonight, he's been out at night. 3VW signal and was catching some chaps in VK3 about his super rotary. 3BE Andy has been silent during past few weeks, look like as if the two 80's have gone to sleep Andy, what about standing them up for a change. Only one board from Geelong was M 3AKE on 40 with a poor signal and QRM, are you on QRP power now Ed? No news from the boys at Camperdown and Ballarat, so what about sending along some of the doings chaps, as I can not hear all signals on the bands. 3UT had Howard 3ED down for a few days, look him along to meet the gang at Warrnambool who made him welcome. 3A 31Q and 31P, they know what is good for the he is in the 31P. Kevin 3KR still catches the 31P, but will be using his vee beam soon. Kevin has new 440 receiver which he is going to rework. A new converter to 40 is 3AGD, down from the 31P. 31P is still working, 31P has good signal but Leigh 31I has gone down in great strength, what about putting up a new antenna and a few more watts.

Geelong Amateur Radio Club held its final meeting for the year on Wednesday 22nd December at 85 Little Launceston Street, Geelong, many of the members came along to witness the closing of the Club's call sign VK3ATL. The first contact was with VK2DQ, and other contacts were made during the night. The transmitter used was a Type 3 which VK2AKB brought along. 3ABE brought along his AR7 receiver. Some of the other chaps brought Type A's. Members wound up the evening with a "break-up" supper after which seasonal greetings were exchanged.

NORTH EASTERN ZONE

Congratulations to 3UT on 50 Mc. W.A.S. Alan and Tom sobbed up enough to snag VK6HIM on Xmas day. Tom needs VK3 3WAL and 3WAL was good over Yma, with all States and ZLA worked on six. After the VK6, Alan and Tom had a joint celebration in Tatura. Alan was not heard for two days, and Tom was out of the zone.

Nothing but disasters in the Zone lately. 3ABX and 3HN helped the search on Mt. Bogong with radio. JACW 3PT and 3JW were on duty at Magdalen Aerodrome when the DC3 aircraft crashed. The Cops got to the wreckage just in time so the new beams will have to be coaxed at 11 h's a birthday. 3PT brought an MFG and now building a car radio for it. 3ON rebuilding the receiver 31AK using a 610 31K and 31Y have terrific signals on 40. The team will be using 31V on 31V on with an AT5, busy with bushfire work 3RU active on 40. 3GD still on DX on ten. 3H2 nearly ready. 31Y on holidays.

31F 31I 3KR, 3AT, 3AQO, and 3DO please send some notes or we will print an interesting story of your past, which you don't want known. Heard 3TS on 40. "The time is 8.00 by the station clock, could be half an hour either way." 3KR has not been speaking to the writer since the par about his stomach. 3UT was wild and denies the VL report. 31Y went past without calling in. 3W 3KR and 31I also.

EASTERN ZONE

The Eastern Zone suggests that v.l.s. notes net frequencies with B.A. switched off and the antenna on receive position, to prevent interference to those operating on the bands.

Be welcome VK3AFL (the old VK6FL) in the Zone, and hope you can join the Sunday night break-ups as soon as accommodation permits. 3WE commenced duties as Control Station on 2nd Jan.

carry, after holidaying in Melbourne. 3LS, operating portable at Lake Tyers, was in the hook-up on 21st January. 3BS has completed new frame motor, home about some details. Bert 3ACA is active on 80, 40, 20 metres and is now building a rig for 6 metres. 3TH is working 6 metre DX; how is the new shack, Gordon? 31Y has worked VK2, 3, 4, 5 and ZLA, can hear ZLA, 3, 4, 5, 6 on 6 metres. 3OI had the misfortune to lose 8 power transformers and a 5A5 in the recent heavy rain. 3IM complains that he is working whatever the ZLA come through on 6 metres. He puts through excellent signals to ZLA, however. At the time of writing, Jim is carrying up to Mildura with 60 and 80 metre portable rigs.

3AKP reports good DX conditions on 41 when 6 is open. Kel is still working 3L on 40, 3PR spent Xmas and New Year co-rotating battery water instead of making hay, and trying to decide whether to put his pole A.C. lines around his antenna, or to shift his new 3VL. Les is trying to hear ZLA

Amateur Radio Station

★ LOG BOOK

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Notes: Second edition available early 1949. 15/- plus 1/- reg. post.

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on 144 Mc. They want VK6 and 7 for 2 metre W.A.S. 384 was seen recently at Inverloch consuming quantities of lolly-water. 3ER was heard on 40 SQZ is busily engaged laying the foundations for his new house, which only leaves three for hook-up. Memo to Sale and District Bums. How about news from you chaps? No news of 8AJL or 8AHL.

CENTRAL WESTERN ZONE

Christmas having come and gone, the zone is now getting back into harness with Xmas Eve and there's shooting off for their annual holidays. A present pre-Christmas visitor was Radio Inspector Nelson, who blew in with an amateur look-up for noises. Another visitor was 3ER from Adelaide, Jack is mainly on 38 Mc, but we introduced him to the virtues of 3.5 Mc, while he was here. 3ER might be on 7 Mc. phone by the time this little print, then again he may not. While Allan is busy with the harvest, a brother-in-law who came up for a holiday is busy building a modulator, last heard of he was building a steel can to shield the tube tranny. 3DP is also using phons during quiet hours. Jim is providing cathode modulation to the old rig and, erried the big noise as yet, gets out very well.

3EF, another of the c.w. boys, is modulating also these days on 7 Mc. Bert is using a Type 2 with plate modulation, it was on so low that he will be moving to a new QTH in a few days. Bert was not worrying about it very much. Anyhow it was nice to hear him in the zone hook-up. 3EF, an expert station with visitors in the shape of 3X3 and 3HS, Mavis and Ivor were visiting the home folks at Minto, and it was pleasant to contact them both once again. 3TF for once missed the hook-up, we missed your cheery voice Bob but no doubt you had a good reason. 3AKW is off on holidays now, how he runs a lamp, picture above and helps 3LK I don't know, but I guess the brief will be appreciated. 3ARM is having a spot of bother with downward modulation but is taking the necessary steps. 3AO also has Mc. 18 ground meter going now and the power up to 38 Watts, but is still in a very hot spot. 3YW over Christmas

related from W.I.A. sheds, and got down to painting the new mast, which should be up before the next lot of notes are due.

ZONE HOOK-UP—As you will remember the time was changed at the Annual Convention to 3 p.m. instead of 10 a.m. and after an extended trial the boys seem to think that the old time was better, so future hook-ups will take place on 7180 Kc. on the 2nd Sunday in each month at 10 a.m. VK3TV as control station.

SOUTH AUSTRALIA

The monthly general meeting was held as usual, when Elwyn Tilden (401) gave a very interesting and entertaining lecture on "Amateur Recording". The records of Amateur transmissions were listened to with enthusiasm and I am sorry that the signals of 3PS were not heard as he a little mood could have been thrown. Better luck next time. A vote of thanks, ally proposed by John Allan (317), was received with acclamation. A very pleasant ceremony opened the evening, to wit, a presentation to the retiring Treasurer, The President (3AWY) in a few well chosen words handed Dee (3182) an electric clock in appreciation of his sterling work during the past year. Dee, with a few (emphasis on the few) direct and appreciative words, thanked everybody for their gesture. Personally I have never known all sections of Amateur Radio to be so united in their appreciation of the work that Dee has performed.

Among the visitors were Messrs. Gay, Peters, Brahman, Burton, Wheatstone, and GGL from Salisbury. Last but not least Rev. Father Smith VK3BA. Invaluable visitors included VK3AWR and VK3VR, both from Broken Hill. Considering the heat of the day, the attendance was more than satisfactory, and once again proved how popular the South Australian Division is.

I have noticed lately that big names in radio apparatus usually mean big prices, but I was over- come the other day when an article that I wished to buy was quoted at 7/6, and when I "wined" a bit to the salesman he said "yes it is a bit hot,

but I have something without a big name that will suit just as well for 5d., and believe me it did too. My motto is, future 2 to ask for no big names, but to explain a what I want and save money.

What with "Steakies," "BJTs," "Quads," etc., I thought I knew them all, but a new one has bubbled up in VK8, "The Inverted bath tub." Originated by a prominent DX Ham from around Glenelg who says that he stumbled upon it accidentally whilst trying to squeeze one and a half wavelengths into the space usually occupied by one wavelength of the common, conventional, stuporous aerial, and "back" (BMD) will give you a good idea of what he is on if you should desire. Full details of this original, revolutionary, stuporous aerial will be forwarded to you by 3PS upon receipt of 10/- 8/6, a 10/- 8/6 10/-, and a Super Pro receiver to cover expenses.

One of my New Year resolutions was to secure as many technical books on radio as I can, and try and find out why it is that a c.w., a peak clipper, and several other modern gadgets will not let a c.w. be overmodulated (according to the operator) and yet when I listen to the a.d. signal on my receiver it is spluttering all over the band. As one informed Ham said, "they may not be able to c.w. but they take up a 'blinky' lot of room." (I know that's right, very Mr. Victorian).

I think now that I am making a very comfortable few months out of it. I have had substituted 3RO for 3AO as a technical magazine "operator." My friends on the two of us were overjoyed at the moment and the implications, but I am sure you are all "ing it" for some reason. I am sure it will be good to see you, my explanation is that I am a very good tuner and handy with a soldering iron, anyway Mr. Printer, treat me good, say old R.A. Please!

A very interesting controversy is being conducted in the "Bulletin" 28-12-48 and 2-1-49 under the heading of Amateur Radio. Whilst not wishing to take sides, I somehow feel that "Radio" (N.S.W.) gave considerable thought to his little

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FIFTY AND UP

NEW SOUTH WALES

The most important highlight during the month of December has been the contacts between N.S.W. and Western Australia with 2ADT, 3WJ, 3LY, and 2BZ working 6WG and 6HM with average \$7-10mts each end.

We offer congratulations to the stations concerned in making the coveted "W.A.S. On 50 Mc." award and also hope that all of the VEs who are only needing VES and conditions suitable during the remaining few months of the year when sporadic E is at the peak reflection period.

A remarkable feature of this season is the absence of VK3 signals on 60 Mc. in New South Wales.

According to Radio Research Board observations, the E layer this year is travelling from S.E. to N.W., whereas last year the majority of breakthroughs occurred when the E layer was moving N. to S., so this might explain why the Victorian signals have been either very weak and unworkable or non-existent. All other States and New Zealand have been most consistent and have reached maximum strength on many occasions.

The V.H.F. Contest, which was organised by the N.S.W. Division V.H.F. Section, is over and although too early yet to give names of stations expected to do very well: Mc - ILZ, 2ADT, 2WJ, 2HU; 144 Mc - 2WJ, 2ADT, 2RJ, ILZ, 2ABZ; 288 Mc - 2ABZ, ILZ, 2WJ, 2HL. However as soon as the Contest Committee check over the returns and point scores, we will have them published in full detail. The Contest was most successful and the co-operation from all who entered was very much appreciated by the sponsors.

The V.E.F.S. Section have just concluded another very successful year and the N.E.W. Council wishes to extend its thanks to all concerned who helped make it so. The following are some of the interesting titles of Lectures delivered to the Section since its inception, to give readers of these notes some idea of the material which has been made available to them:

- (a) Control of Aircraft by O.S.I.R.;
- (b) Modification of A.S.I. Equipment; Wave Propagation; Valve Techniques;
- (c) Radar as used by O.S.I.R.;
- (d) U.H.F. Techniques and Centimeter Applications; Radar to Moon, by O.S.I.R.; V.H.F. Antennas for Track Radar; Radar for Airports;
- (e) Track Radar; Mobile P.M. Equipment (Transmitters and Receivers); V.H.F. Receiver Design; Signal Circuits of V.H.F. Receivers and Merits of Various Valves; Actual Demonstrations with Mobile V.H.F. Equipment; Signal Questions.

The Lectures have been the result of careful organisation by the members of the V.H.F. Group and we would like to extend our thanks to the various lecturers who have visited us at our invitation to impart to us their knowledge on subjects of topical interest for our benefit.

At the last meeting held at Science House on 14th January, 1949, it was decided on the recommendation of the Divisional Council to impose a levy of sixpence per person at each subsequent meeting to cover the cost of the refreshments which had increased recently. Although some people think Council should carry the cost entirely, it was thought that rather than let the V.I.P. Section be a burden on the rest of the Society, which does not exist, we should at least help Council with its financial obligations on a fifty-fifty basis, that is as our Section is concerned. The motion to this effect was carried unanimously so there we can carry on our part of the cost of being forced to wind up on account of the high cost.

Divisional Council also very generously agreed to donate a sum of five pounds to cover cost of incidental expenses such as hiring and the cost of running an epidiascope for use during lectures. To sum up the situation, we are all agreed that the V.H.F. Section has done very well for itself and hopes to continue to do so with your help and co-operative interest.

WESTERN AUSTRALIA
Compiled by MACKENZIE

Since my last report dated 80/11/48, much has happened on this band, which opened up again about the early part of December. VK6WG, at Albany, and 6HM at Kalgoorlie both having made many Eastern States contacts. However, such contacts from Perth seem to be a totally different

matter. 6LW with a 3 element rotary beam, and 6FC with a long wire antenna (which, when properly tuned, seems to have considerable gain over a single dipole, both for receiving and transmitting) have heard and worked only a few Eastern States stations. 6FC worked 5CU and 5GL (96 QSB) on Xmas morning.

On about 20th Dec. 6FO was again answered by 5CU just one minute before 6FC's power was cut. Consequently no QSO resulted. Nor did any QSO result with 6LW as VK5s signal faded out.

During the last two months, we have noted with interest, that the opening of the 6 metre band seems to coincide with the reception in Perth of various and many radio ranges throughout the Commonwealth on 33.6 and 33.3 Mc. These have been heard in Perth during the last two months, for about two weeks each month, commencing roughly about the 15th day and when they become inaudible in Perth for the remainder of each month. They are just beginning to come in again at time of writing.

Have just heard that 6DW at Bruce Rock got through to VK6 last Sunday (Jan. 4) about 6 p.m. Perth time. Rollo Everingham (who we hope to hear on the air soon) heard 6CU, 6GB and 6GR in Perth at 3.35 p.m. Perth time. 6GS in Harvey and 6BC at Wagin, both heard VK5s but again at different times, while 6WG at Albany got through at times unknown. 6LW, who was listening continuously throughout the day except between 3 p.m. and 5 p.m. (Perth time), heard no sign whatsoever of any signals.

We have much pleasure in welcoming 6BK (Gooseberry Hill) and 6OB (Perth) back on the band, and are now looking for 6BA's return. What about W.A.S. 60 Mc. Jim? Also what about 6FW and 6JW coming back on the band?

The follow is the v.h.f. gear in use at VK9BZ:
144 Mc.—transmitter K6C233 modified for a.c. operation. Two power tubes being used, each rated at 100 watts, 135 Ma., and two 5.5 amp. windings. These windings give two 12.5 amp. supplying filaments and the other, per medium of a dry rectifier, a d.c. supply for the relays and the vibrator. The vibrator is supplied directly from separate pack. Receiver: SCE322 modified to operate in manner to work outside the mounting rack from conventional power supply. Antennae: two in use. One horizontal beam, three directors, feed dipole and one reflector. Thirty two feet high. Second antenna: EF9 oscillator, RLT mixer, RLT detector, 740 plate modulator, running 80 watts for amplitude modulation and 100 watts frequency mod. (in latter case, xtal is 144 Mc. crystal).
The receiver is a converter based on a Beam Tube receiver using RLT r.f., RLT mixer, EF90 oscillator with use stage of I.F. (approx. 10 Mc.) on the converter. Antenna is horizontal, four half waves in phase.

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EXCHANGE, WANTED**

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Copy must be received by 15th of month. Remittance must accompany advertisement. Calculation of cost is based on an average of six words per line.

FOR SALE.—AR3 Receiver, a.c./d.c. power pack 240 v. and speaker. Good condition. £20 f.o.r. J. M. Hillard, Box 2, Kapunda, S.A.

FOR SALE.—New 803 and socket, 1400-400-0-400-1400 volt 200 Ma. plewound tranny, Hilco 7.5v. 4a, 6.3v. 3a, 5v. 3a, 10a. at 2.5v., 2 x 866 nearly new rectifiers, tranny 10v. 5a., 2uF. 1000v. T.C.C., 4 uF. 1000v. Chanex. Lot for £13/10/-. VK3JG, Lake Boga, Vic.

FOR SALE.—AR8 Receiver in good order, remaining in use until sold. Any reasonable offer considered. VK2YN, P.O. Box 60, Bourke, N.S.W.

FOR SALE—Transformers 2000-0-2000 t. 1800, 1500, 1000 at 500 Ma., £9/10/-; 680-0-680 t. 350 at 250 Ma., £3/18/-; 1500-0-1500 t. 1250, 1000, 750 at 300 Ma., £7/10/-; 2000-0-2000 t. 1500, 1250, 1000, 750, 500 at 200 Ma., £2; 1000-0-1000 t. 750, 500 at 200 Ma., £2/15/-. Filament Transformers 10v. 7a. 2c, 35/-; 2.5v. 10a. 35/-; 6.3v. 2v. 6.3v. 2v., 7.5v. 3a. 25v. 10v., £2/15/-. 500 Ma., Ringing, £-20H. 500 Ma., 5-20 H. 500 Ma., 30/-; 200 H. 500 Ma., 35/-; Smoothing H. 500 Ma., 45/-; 12 H. 250 Ma., 30/-; 12 H. 300 Ma., 35/-.

Modulation Transformer Class B for T240s 300 v. rating tapped sec., £6/10/-.

Driver for above, £2/5/-.

Another for 601s, sec. has 6 taps with driver trans. and tubes. £4/15/-.

Valves: 666s, 12/6 ea.; 868 Jr., 10/- ea.; T240s, 30/- ea.; 100TH, 55/- ea.

Exciter unit comprises 6V6 807 plate meters 4 x tals 7-14-28 Mc. coils, standard rack mounting, £2/10/-.

500 p.p. 500 Ma. 500 Ma. grid meter, standard rack mgt., £7/10/-.

P.A. pp. triodes plate and grid Ma. and h.t. and fl. v. meters 14-28 Mc. coils £10. 1P. amp. 2-65J7 1-6N7 p. to line Abac transf. level indicator in steel case, £7/10/-.

Sp. amp. 1-6N7 2-2A3 Ma. meter T attenuator Abac line to g. transf. rack mgt., £7/10/-.

200 Ma. p. supply for above, £4/16/-.

300 v. bias supply, £2. 350 v. pwr. supply 150 Ma. £3/15/-.

Copper oxide rectifier 24v. 6a. £1. 100 Ma. standard rack, £8. J. Symons, VK3JT, 30 Ashburn St., Ashburnton. Phone, day only, JM 1262, Ext. 433.

A.M.R. 200 Receiver, copy of Hammarlund Super Pro. 14 Valve Continuous Coverage, a thousand k/c to 30 M/c variable I.F. and Xtal Channels complete with A.C. Power Supply. £75.

S.X. 28 Receiver 16 Valves 500 K/c to 43 M/c. Very clean condition. An excellent performer. £75.

B.C. 348 Receiver, Condition as new,
converted to A.C. £42/10/-.

Transmitter 50 Watt Phone or C.W.
Line up E.L. 3 Xtal Oscillator 6 L6
Doublers, Quad, Intp 807 in final band
and meter switched coverage 10, 20 and
40. Modulated with a pair of 6 L 6s in
class A.B.1. Contained in crackle fin-
ished steel Cabinet. Complete with Xtal
Microphone. £37/10/-

S.C.R. 522 Transceiver complete with 20 Valves including 2-832s. Ideal for 144 M/c operation. £10.

Also a few only Command Transmitters and Beam Rotating motors at £5 each. Lots of other useful gear.

MILBURN, 5a Melville St., Hawthorn.
Phone: Haw. 4485.

WANTED.—Class C Wavemeter in good condition. Price and particulars to VK3ARY, R. Yeats, 4 Jennings St., Moonee Ponds, Melb. (Phone: FU 7280).

TRANSFORMERS OF DISTINCTION

FILAMENT TRANSFORMERS

ITEM 34.	Type No. 7038
Prim: 220v.	30 cps.
Secondary	6.3v-2A
Base: 2½ x 2 x 2½" H	Wgt 1lb. 4ozs.
Mntg: MH1A	"S" is 1"
Insulation	500 volts
ITEM 35.	Type No. A246
Prim:	Auto Winding
V: Common	2.5v 4v
Base: 2½ x 2 x 2½" H	Wgt 1lb. 4ozs.
Mntg: MH1A	"S" is 1"
ITEM 36.	Type No. 2560
Prim: Com-10-210-220-240v	30 cps
File: 5v-4A	2.5v-10A CT
Base: 4 x 4 x 3½" H	Wgt 4lb. 8 ozs.
Mntg: V10	"S" is 1"
Insulation	2000 volts
ITEM 37.	Type No. 5526
Prim: Com-10-210-220-240v	30 cps
File: 5v-4A	2.5v-10A CT
Base: 4 x 4 x 3½" H	Wgt. 4lb 12ozs
Mntg: V10	"S" is 1½"
Insulation	1000 volts
ITEM 38.	Type No. 5566
Prim: Com-10-210-220-240v	30 cps
File: 5v-4A	6.3v-3A
Base: 4 x 4 x 3½" H	Wgt 4lb. 12 ozs.
Mntg: V10	"S" is 1½"
Insulation	1000 volts
ITEM 39.	Type No. 66105
Prim: Com-10-210-220-240v	30 cps
File: 5v-4A	6.3v-3A CT
Base: 10v-6A-CT	6.3v-3A
Base: 3 x 4½ x 4½" H	Wgt. 12lb. 8 ozs.
Mntg: V15	"S" is 2"
Insulation	1000 volts

VIBRATOR POWER TRANSFORMERS

ITEM 40.	Type No. 60256
Primary	6v/6v
Secondary	250/250v 60 mA
Base: 3 x 2½ x 2½" H	Wgt 2lb 8ozs.
Mntg: V2	"S" is 1½"
ITEM 41.	Type No. 602512
Primary	12v/12v
Secondary	250/250v 60 mA
Base: 3 x 2½ x 2½" H	Wgt 2lb. 8ozs.
Mntg: V2	"S" is 1½"
ITEM 42.	Type No. 15136
Primary	6v/6v
Secondary	120/130v 15 mA
Base: 3 x 2½ x 2½" H	Wgt 2lb.
Mntg: V2	"S" is 1"

OUTPUT TRANSFORMERS

The units in this section comprise a useful range of output transformers for the sound engineer specialising in amplifiers for public address, "Music-while-you-work," paging systems, etc., where it becomes essential to minimise losses due to the necessary use of multiple speakers

at varying distances from the amplifier. They are not "High fidelity" transformers, and are not intended as such. Their frequency response, in all cases, is designed to be plus or minus 2db from 50 cps to 7 Kc/s, and particular care has been taken to reduce power insertion losses, which are of considerable importance in this field. Complementary types to match speaker voice coils to line will be listed in the future.

ITEM 43.	Type No. AP1
Primary Z: 5000 ohms	Plus 25db
6V6 Class A1: 4.5 Watts. DC Max. 50 mA	
Secondary Z:	500 ohms
Base: 2½ x 2 x 2½" H	Wgt 1lb. 8ozs.
Mntg: MH1B	"S" is ½"
ITEM 44.	Type No. OPI
Primary Z: 5000 ohms	Plus 29db
6V6 Class A1: 4.5 Watts. DC Max. 50 mA	
Sec. Z: 12 ohms tap at 8.4 and 2 ohms	
Base: 2½ x 2 x 2½" H	Wgt 1lb. 8ozs.
Mntg: MH1B	"S" is ½"
ITEM 45.	Type No. AP2
Primary Z: 9000 ohms	Plus 34db
6V6's pp Class AB1	15 watts
Sec. Z: 500 ohms tapped 250 ohm.	
Base: 3 x 3½ x 2½" H	Wgt 3 lb.
Mntg: V2	"S" is 1½"
ITEM 46.	Type No. OP2
Primary Z: 9000 ohms	Plus 34db
6V6 pp Class AB1	15 watts
Sec. Z: 12 ohms tap at 8.4 and 2 ohms.	
Base: 3 x 3½ x 2½" H	Wgt 3 lb.
Mntg: V2	"S" is 1½"
ITEM 47.	Type No. AP3
Primary Z: 6600 ohms	Plus 37db
6L6's pp Class AB1	or 807's
Secondary Z: 500 ohm tapped 250 ohm.	
Base: 4 x 4½ x 3½" H	Wgt 6lb.
Mntg: V10	"S" is 1½"
ITEM 48.	Type No. OP3
Primary Z: 6600 ohms	Plus 39db
6L6 pp or 807's Class AB1	30 W
Sec. Z: 12 ohms tap at 8.4 and 2 ohms	
Base: 4 x 4½ x 3½" H	Wgt 6lb.
Mntg: V10	"S" is 1½"
ITEM 49.	Type No. AP4
Primary Z: 2500 ohms	Plus 30 db
6L6 (907) Class A, 6W	12 ma DC
Secondary Z: 500 ohm Tapped 250 ohm.	
Base: 3 x 3½ x 2½" H	Wgt. 3lb.
Mntg: V2	"S" is 1½"
ITEM 50.	Type No. OP4
Primary Z: 2500 ohms	Plus 30 db
6L6 (907) Class A, 6W	12 ma DC
Sec. Z: 12 ohms tap at 8.4 and 2 ohms.	
Base: 3 x 3½ x 2½" H	Wgt. 3lb.
Mntg: V2	"S" is 1½"
ITEM 51.	Type No. AP5
Primary Z: 5206 ohms	Plus 40db
807's Class B.	60W
Sec. Z: 500 ohms tapped 250 ohm	DC Balanced
Base: 4 x 4½ x 4½" H	Wgt. 9 lb.
Mntg: V11	"S" is 2½"

RED LINE EQUIPMENT PTY. LTD. TRANSFORMER ENGINEERS

WORKSHOP: Cent. 4712. CITY OFFICE: MU 6885
2 Coates Lane, Melbourne (3 lines), 157 Elizabeth St., Melbourne.

KEEP THIS CATALOGUE
Cut out and file for reference



DISTRIBUTORS:

VICTORIA:
Homcrafts Pty. Ltd.
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salers.
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Pty. Ltd.

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Ltd.
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J.H. MAGRATH & CO.

Special Prices!

To Members of the W.I.A.



Aphenol Connecto

for mike etc. Nickel plated and completely shielded. Type MC1P, 3/6; Type PC1M, 2/9. Plus tax.

R. F. Transmission Line

New stocks have arrived of 75, 150 and 300 ohm Cable. Buy while it lasts. Price 75 and 150 ohm. 6d. yd., 300 ohm. 8d. yd. plus tax.

Meters

We are distributors for University Meters and Test Equipment. Shunts Scales and Test Leads, etc. available from stock.

Valves

We have a limited number of hard to get valves. Contact us regarding your requirements.

Chassis Punch

for new miniature socket. Price 13/4 each plus tax.



Electrolytic Condensers

Ducon 12 mfd 525 Volt, 2/3 each plus tax. All sizes available. Have you seen the new small size 25 mfd 40 volt. 1/10 each plus sales tax.

MINIATURE PLUGS and SOCKETS



for Speaker or other use. 4 pin plug 7d. 4 pin socket 6d. plus tax.



Power Transformers

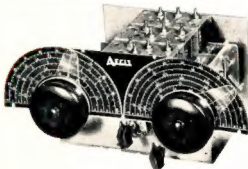
TYPE PT1400

Universal type . . . 565 volts each side. Tapped 425 volts at 300 mls . . . plus a heat of other heater windings. £3/17/6 plus tax.

Resistors I.R.C.

1% tolerance for Meters etc. Priced at 1/4 each plus tax.

AEGIS KC4



Four band unit. Band spread on amateur bands. 6SK7 RF, 6AC7 mixer 6SK7 osc. Well on all bands. Completely wired and tested. £21/13/4

Beautiful metal cases for above complete with panel chassis Chromium bars, etc. . . . £4
All prices plus tax.

YOUR ADVICE REQUIRED!

We are considering the manufacture of a Communications Receiver Kit Set. The idea is to supply the basic essentials only, but to punch the chassis and panel for the later addition of refinements such as "S" Meter, Crystal Filter, etc. Drop us a line and give us your ideas on the subject.

J.H. MAGRATH & CO.

208 LITTLE LONSDALE STREET, MELBOURNE